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03.06.1996 US 657409

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(62) Document number(s) of the earlier application(s) in
accordance with Art. 76 EPC:
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(54) **Screening methods for enzymes and enzyme kits**

(57) Recombinant enzyme libraries and kits where a plurality of enzymes are each characterized by different physical and/or chemical characteristics and classified by common characteristics. The characteristics are determined by screening of recombinant enzymes expressed by a DNA library produced from various microorganisms. Also disclosed is a process for identifying clones of a recombinant library which express a protein with a desired activity by screening a library of expression clones randomly produced from DNA of at least one microorganism, said screening being effected on expression products of said clones to thereby identify clones which express a protein with a desired activity. Also disclosed is a process of screening clones having DNA from an uncultivated microorganism for a specified protein activity by screening for a specified protein activity in a library of clones prepared by (i) recovering DNA from a DNA population derived from at least one uncultivated microorganism; and (ii) transforming a host with recovered DNA to produce a library of clones which is screened for the specified protein activity.



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EUROPEAN SEARCH REPORT

Application Number
EP 06 00 9151

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	JP 02 238882 A (TAKARA SHUZO CO LTD) 21 September 1990 (1990-09-21) * the whole document *	1	INV. C12N9/00
X	1991, STRATAGENE, XP002191523 Product Catalogue; "Innovations in Molecular Biology" * page 60 - page 61 *	1	
X	1994, PROMEGA, XP002191524 Catalog Biological Research Products; "Tools to Explore New Worlds" * page 170 - page 175 *	1	
X	SAMBROOK J ET AL: "MOLECULAR CLONING. LABORATORY MANUAL. Vol. 2" 1989, COLD SPRING HARBOUR PRESS, NEW YORK, XP002203437	5-7	
Y	* page 8.50 - page 8.51 *	8-13	
X	MCCORMICK M: "SIB SELECTION" METHODS IN ENZYMOLOGY, ACADEMIC PRESS INC, SAN DIEGO, CA, US, vol. 151, 1987, pages 445-449, XP001087654 ISSN: 0076-6879	5-7	TECHNICAL FIELDS SEARCHED (IPC)
Y	* page 445, paragraph 1 * * page 449, paragraph 2 *	8-13	C12N C12Q
	-/--		
-The present search report has been drawn up for all claims-			
Place of search Munich		Date of completion of the search 3 August 2006	Examiner Tudor, M
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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EPO FORM 1503 (03.02.02) (P04/021)



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 06 00 9151

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	<p>BARNS SUSAN M ET AL: "Remarkable archaeal diversity detected in a Yellowstone National Park hot spring environment" PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF USA, NATIONAL ACADEMY OF SCIENCE, WASHINGTON, DC, US, vol. 91, no. 5, March 1994 (1994-03), pages 1609-1613, XP002139887 ISSN: 0027-8424</p> <p>* abstract *</p> <p>* page 1609, left-hand column, paragraph 2 - right-hand column, paragraph 1 *</p> <p>* page 1610, right-hand column, lines 30,31 *</p> <p>* page 1613, left-hand column, paragraph 3 *</p>	8-13	
A	<p>US 4 675 285 A (CLARK STEVEN C ET AL) 23 June 1987 (1987-06-23)</p> <p>* the whole document *</p>		TECHNICAL FIELDS SEARCHED (IPC)
<p>The present search report has been drawn up for all claims</p>			
Place of search		Date of completion of the search	Examiner
Munich		3 August 2006	Tudor, M
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone</p> <p>Y : particularly relevant if combined with another document of the same category</p> <p>A : technological background</p> <p>O : non-written disclosure</p> <p>P : intermediate document</p> <p>T : theory or principle underlying the invention</p> <p>E : earlier patent document, but published on, or after the filing date</p> <p>D : document cited in the application</p> <p>L : document cited for other reasons</p> <p>& : member of the same patent family, corresponding document</p>			

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EPO FORM 1503 (03.02) (P04C01)

**CLAIMS INCURRING FEES**

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- ☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- ☒ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- 1 (invention 1), claims 5-7 (invention 4)
claims 8-13 (invention 5).
- ☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:



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LACK OF UNITY OF INVENTION
SHEET B

Application Number

EP 06 00 9151

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claim: 1

An enzyme kit, comprising, a package said package containing at least three different recombinant enzymes, each of said enzymes having at least two enzyme characteristics in common, one of said characteristics being a chemical characteristic and the other being a physical characteristic.

2. claims: 2, 3

A process for obtaining a recombinant enzyme library, comprising, screening recombinant proteins produced by a plurality of expression clones, each of which contains a polynucleotide derived from a microorganism, said screening being effected to determine the clones which produce recombinant enzymes, and to determine a plurality of different enzyme characteristics for the recombinant enzymes, and classifying the recombinant enzymes by said characteristics; and subject matter related thereto.

3. claim: 4

A process for producing an enzyme screening kit, comprising, placing in a package at least three different selected enzymes, said enzymes being selected from a recombinant enzyme library having a plurality of different enzymes having different enzyme characteristics, said enzymes of said library being classified by said enzyme characteristics, each of said at least three different selected enzymes each having at least two common enzyme characteristics.

4. claims: 5, 6, 7

A process for identifying clones of a recombinant library which express a protein with a desired activity, comprising, screening in the liquid phase a library of expression clones randomly produced from DNA of at least one microorganism, said screening being effected on expression products of said clones to thereby identify clones which express a protein with a desired activity; and subject-matter related thereto.

5. claims: 8-13



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**LACK OF UNITY OF INVENTION
SHEET B**

Application Number
EP 06 00 9151

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

A process of screening clones having DNA from an uncultivated microorganism for a specified protein activity, which process comprises, screening for a specified protein activity in a library of clones prepared by (i) recovering DNA from a DNA population derived from at least one uncultivated microorganism; and (ii) transforming a host with recovered DNA to produce a library of clones which is screened for the specified protein activity; and subject-matter related thereto.

ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.

EP 06 00 9151

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

03-08-2006

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 2238882	A	21-09-1990	NONE	
US 4675285	A	23-06-1987	NONE	